



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/606,884	06/29/2000	Xiangxin Bi	2950.32US03	6843

7590

04/21/2003

Peter S. Dardi  
Patterson, Thunte, Skaar & Christensen, P. A.  
4800 IDS Center  
80 South 8th Street  
Minneapolis, MN 55402-2100

EXAMINER

CHANEY, CAROL DIANE

ART UNIT

PAPER NUMBER

1745

14

DATE MAILED: 04/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/606,884

Applicant(s)

BI ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,4-11,13-28 and 30-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,4-11,13,14,20-28 and 30-37 is/are allowed.
- 6) ☒ Claim(s) 15-19,38-42 and 47-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

***Allowable Subject Matter***

Claims 1, 4-11, 13, 14, 20-28, 30-37 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Independent claims 1, 8, and 20 recite distributions of the sizes of particles of vanadium oxide used as cathode active materials. The nearest prior art of Koksang or Olsen does not suggest specific particle size distributions.

***Claim Rejections - 35 USC § 112***

The rejection of claims 38-42 under 35 USC 112 second paragraph has been withdrawn in view of applicants' amendments to these claims.

Claims 15-19 and 38-42 are rejected under 35 USC 112 first paragraph for reasons of record. Applicants' specification, while being enabling for battery with cathodes having vanadium oxide or titanium oxide nanoparticles as an active material, does not reasonably provide enablement for batteries having nanoparticles of all cathode active materials, particularly metal oxides, which can intercalate lithium and have an energy density greater than 900 Wh/g. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims. Because of the wide differences in the chemistries of various metal oxides, one of ordinary skill in the art could not extrapolate applicants' teachings regarding forming nanoparticles of

Art Unit: 1745

vanadium oxides and/or titanium oxides to other compounds, or even other metal oxides.

### ***Claim Rejections - 35 USC § 102***

Claims 47-52 are rejected under 35 U.S.C. 102(a) and (e) as being anticipated by Koksbang, US Patent 5,549,880 for reasons of record.

Koksbang discloses secondary lithium batteries comprising a lithiated vanadium oxide cathode active material, a lithium metal anode, and either a polymer electrolyte separator or a solid electrolyte separator. (Note column 5, line 60-column 6, line 3 and column 6, lines 12-35.) The vanadium oxide particles are "in the form of a fine powder having a surprisingly small particle size on the order of 0.1 to 5 microns." (Note column 2, lines 58-61.)

### ***Response to Arguments***

Applicant's arguments filed 03 February 2003 have been fully considered but they are not persuasive.

With regards to the 35 USC §112 first paragraph rejection, applicants' assert the instant specification provides one of ordinary skill in the art with "reasonable correlation" between the scope of enablement and scope of the claims. However, because of the differences in the chemistries and reactivities of different compounds, one of ordinary skill in the art could not reasonably expect applicants' teachings regarding vanadium oxides and titanium oxides to correlate with all other cathode intercalation compounds.

With regards to the anticipation of claims 47-52 by Koksbang, applicants assert vanadium particles “in the form of a fine powder having a surprisingly small particle size on the order of 0.1 to 5 microns and typically less than 10 microns” describes a specific distribution of particle sizes with an average particle size of about 2.5 microns. In contrast, the examiner interprets “...particle size on the order of 0.1 to 5 microns...” to describe a range of average particle sizes. Applicant argues the phrase “typically less than 10 microns” suggests the range language in Koksbang is a range of particle sizes and not a range of averages because interpreting the Koksbang range as a range of average particle sizes renders the phrase “typically less than 10 microns” superfluous. However, it would appear that even if the phrase “0.1 to 5 microns and typically less than 10 microns” describes a specific distribution of particle sizes with an average particle size of 2.5 microns, the statement “typically less than 10 microns” would also be superfluous. Thus, the fact that the phrase “typically less than 10 microns” is included in the Koksbang disclosure does not distinguish the two interpretations of the statement: “in the form of a fine powder having a surprisingly small particle size on the order of 0.1 to 5 microns and typically less than 10 microns”.

Applicants further assert that Koksbang does not teach a range of average particle sizes because Koksbang does not disclose methods of varying process conditions to vary particle sizes. Applicant notes that Koksbang provides only one set of process conditions in the disclosed example and states that one of ordinary skill in the art would expect the Koksbang disclosure to include a disclosure of various process

Art Unit: 1745

conditions to select a specific particle size range. However, this argument is not convincing. Koksbang's invention is directed to forming a vanadium oxide by precipitation, and factors controlling particle size in precipitation reactions are well-known in the art, and thus would not be necessary to disclose. Furthermore, the Koksbang invention is not limited to the disclosed examples, and supposition based upon what has not been disclosed is not convincing.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 1745

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Carol Chaney  
Primary Examiner  
Art Unit 1745

cc  
April 17, 2003